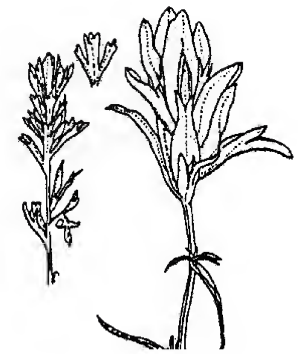

Castilleja

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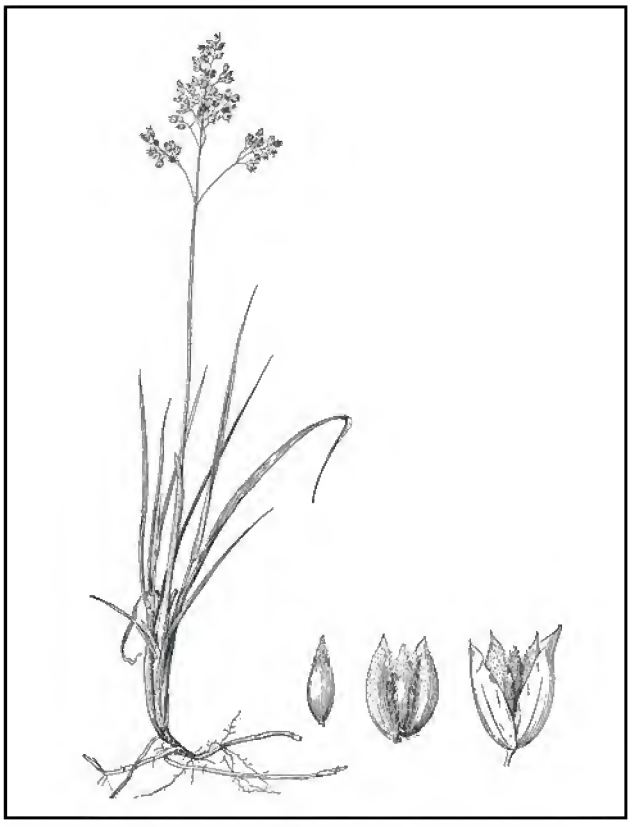

Above: Sweetgrass (*Anthoxanthum hirtum* (Schrank.) Y. Schouten & Veldkamp; syn. *Hierochloe odorata* (L.) Beauv. ssp. *hirta* (Schrank) Tzvelev) is a widespread Wyoming wetland plant that epitomizes the challenge of keeping the National Wetland Plant List current in light of taxonomic change. (From: Hitchcock, A.S., rev. by A. Chase. 2nd ed. 1950. *Manual of the Grasses of the United States*. US Govt. Printing Office, Misc. Publ. No. 200.)

In this issue:

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No Small Change:

Taxonomy and the National Wetland Plant List

By Bob Lichvar

"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change." Charles Darwin

Back when the Wyoming Native Plant Society was just a fledgling society, plant taxonomy was on a different page than it is today. At the time, taxonomy focused on the use of chromosomes, flavonoids, isozymes, and traditional morphological approaches to classify plant species. Taxonomic changes were at a steadier rate of change than today. Large national and regional floras were in their heyday, describing the interesting and diverse flora of North America. The "big guns" (Cronquist, Barneby, Stebbins, Rollins, etc.) were still publishing and reviewing manuscripts that, to my then-youthful outlook, somehow all seemed to provide a more stable, consistent, and balanced approach to how plants were to be classified.

Then in the 1990's, phylogenetic analyses (DNA) hit taxonomy with a revolutionary impact. We went from relying on counting chromosome numbers, to Bayesian statistics to explain genetic differences we can't see with our hand lens, to having the ability to estimate dates of divergence, analyze clades, etc. Convergent evolution went from an example of how some species with similar morphologies may have evolved the same traits independently to showing how co-evolving morphological traits may have been used to cluster unrelated species, genera and even families. These major advances in plant science have changed many taxonomic thoughts and species interpretations and have had a profound impact on our current taxonomic thinking. (Continued, p. 10)

WNPS News

Message from the President

Season Greetings! And a heartfelt *THANKS* to all who have helped Wyoming Native Plant Society blossom for 30 years. In this issue, we have the privilege of hearing from members who joined first in 1981 (Bob Dorn, Ron Hartman, Bob Lichvar, Mark Stromberg), and from newer ones.

Included in this newsletter is a membership renewal and ballot form (ahem, there are a few of us running again who would like your support). Thanks for completing the form and mailing it back. In other news, at the 2011 Annual Meeting, members voted to increase scholarship award levels and expand the scope to include educational projects (see the accompanying 2012 Markow Botany Scholarship/Small Grant announcement.)

As 2012 approaches, I encourage you to draft New Year's botanical resolutions. At the top of my list is to attend the joint annual meetings of WNPS and American Penstemon Society, June 22-25 in Laramie. Hope you can join! …Finally, if you are in need of last minute holiday gifts, I leave you with some botanical gift ideas. I like lists:

-Visit your local book store to find native plant books including any books reviewed in *Castilleja*. [E.g., Arid Lands Restoration – this issue; Star Valley Wildflowers – Oct 2011, Greater Yellowstone Flora / Wyoming Grasses – Dec 2010; Planting with Natives – May 2007.]

- Pick socks, ties, hats, or my favorite . . . vintage handkerchiefs with flowers on them.

- Gather rose hips and brew a tea chock full of Vitamin C. Field mint (*Mentha arvensis*) also makes a nice tea. Make a note to collect more next year.

- Give a WNPS membership. You could even gift yourself with a lifetime membership.

-Print out your favorite wildflower photos and make a set of gift cards or a 2012 calendar. Our family Christmas photo was taken at the annual meeting.

-Donate to a cause that directly supports native plants and their habitats.

- Create holiday wreaths from sagebrush, evergreens, or holly shaped leaves of Oregon Grape.

-Find your own native Wyoming mistletoe (*Arceuthobium* spp.), parasitic on conifers. Look for the tell-tale "witches-broom" in lodgepole pines and other evergreens; aphrodisiac properties unknown.

-Pen a pithy plant poem.

~Amy Taylor

Calling All Fieldtrip Leaders : WNPS will prepare a fieldtrip flyer of statewide hikes again in 2012. Teton Chapter members, please contact Amy Taylor. Folks who can lead Laramie-area hikes in the 2012 annual meeting, please contact Dorothy Tuthill. All other members or organizations should send information to Bonnie Heidel (date, meeting place and destination, hike distance and difficulty level, leader, and sponsor).

New Members: Please welcome the following new members to WNPS: Lori Brummer, Ft. Collins, CO; Jana Heiseler White, Laramie; Rachel Newton, Ft. Collins, CO; Orval Harrison, Salt Lake City, UT, Jim and Stephanie Zier, Parkman.

TIME TO RENEW: The annual membership year is the calendar year. See the mailing label number after your name to find out the last paid year (e.g., "John Doe 12" means you paid through 2012).

Wyoming Native Plant Society
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WNPS Board – 2011

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Bighorn Native Plant Society: P.O. Box 21,
Big Horn, WY 82833 (Jean Daly, Treasurer)

Treasurer's Report: Balance as of 26 November: Scholarship = $3,012.50; General $4,826.06; Total = $7,838.56.

Contributors to this Issue: Ann Boelter, Karen Clause, Robert Dorn, Ronald Hartman, Bonnie Heidel, Robert Lichvar, Mark Stromberg, Amy Taylor, Dorothy Tuthill, Eve Warren.

Wyoming Native Plant Society Formation:

The Good Ol' Days

By Mark R. Stromberg

(*Editor's note: Mark Stromberg was on the first Board of Wyoming Native Plant Society.*)

Long before the days of personal computers, when an IBM Selectric Typewriter was hot stuff, I was hired by The Nature Conservancy to organize the Wyoming Natural Heritage Program, later renamed Wyoming Natural Diversity Database. Although I grew up in largely ex-urban parts of New Mexico, and had a degree in Wildlife Biology from Colorado State, the move back West from graduate school in Madison, WI was a culture shock. Bob Dorn, then at the Wyoming Department of Environmental Quality (DEQ), was an island in a sea of people who had largely never thought much about native plants. He helped us get an office, get folks hired, and start collecting data on what plants in Wyoming were suffering from either benign neglect or from no one knowing or caring. Bob cared, but was careful to urge that we do the possible. It was the early 1980's and James Watt was the Secretary of the Interior.

Our office was upstairs in the Majestic Building on the 1600 block of 16th Ave in Cheyenne, just down the street from the Union Pacific Station, but most importantly, across the street from a great pie shop. We actually had a full time elevator operator, and she would open and close the brass cage for us and announce floors. We would convene lunch or coffee breaks in the pie shop. At one of these breaks, the idea of forming a native plant society, like those in other states, was discussed. As I recall, Bob Dorn, Phil White, and Bob Lichvar were big supporters of the organization to promote knowledge of Wyoming Natives. Dutch apple pie figured prominently in the organizational efforts. As Phil is an attorney, he drew up the 501.c.3. paperwork, and the group was approved by IRS and started out with maybe 20 members. Membership included the botany stalwarts and students at University of Wyoming - Botany Department and the Rocky Mountain Herbarium, as well as the scattered U.S, Forest Service and Bureau of Land Management botanists.

Above: The Majestic Building, Cheyenne, featured prominently in early origins of Wyoming Native Plant Society, or more precisely, the pie shop nearby did.

Recognition of native plants was not widespread then. I was asked by a Denver representative of the U.S. Fish and Wildlife Service (USFWS) if I would find some agency in the Wyoming state government that might take on a cooperative management agreement with USFWS Office of Endangered Species, for plants. Well, I asked around and found the only group was a small agriculture sub-committee that met to discuss state support for spraying herbicide along state highways. I pulled together a presentation on the native plants, and on some of the rare ones, and was met by a polite, if stunned silent audience. Only one gentleman had questions....

" *Do cows eat these plants*?"

Well, I explained, they are not a big part of the diet of cattle as they are typically pretty rare, and are probably ignored.

..."*Do sheep eat these plants*?"

Again, I explained that yes, they might be eaten by some sheep, on some occasions.

"*So, then; what is this talk about native or rare plants -- some kind of hobby of yours? Meeting adjourned*".

(*Editor's note: The pastry-filled beginnings of Wyoming Native Plant Society are also described by Phil White in the May 2001 issue of Castilleja 20 (2).*)

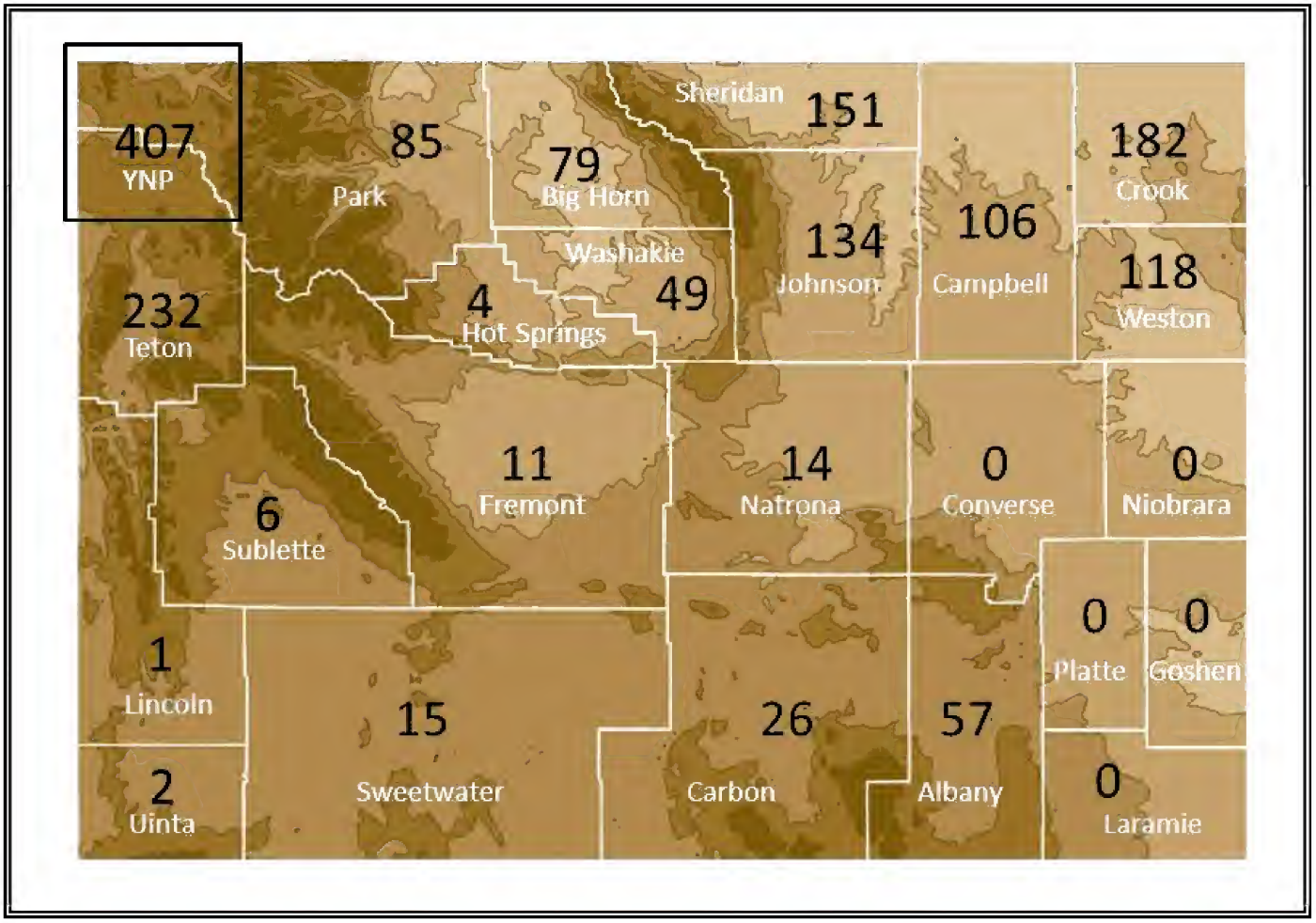

Figure 1. Numbers of lichen species recorded from Wyoming counties and Yellowstone National Park (Tuthill, in preparation). Basemap elevation contours at 4500, 6000, 7500, 9000, & 12000 ft.

An Updated Checklist of Wyoming Lichens

By Dorothy Tuthill

It's been one hundred and eleven years since anyone has compiled a list of the lichen species found in Wyoming. In the year 1900, it was Aven Nelson, Wyoming's famous first botanist (and first cryptogamologist) who made the list—60 taxa from six counties and Yellowstone National Park. Most were his own collections, with identifications by "Prof. T.A. Williams of the Division of Agrostology of the U.S. Department of Agriculture" (Nelson 1900). However, Nelson wasn't the first person to make scientific collections of lichens in Wyoming. That honor goes to the Hayden expedition of 1872. They returned with 70 lichen specimens that were identified by Henry Willey of New Bedford, MA, and reported in the Sixth Annual report of the USGS in 1873. Unfortunately, location is given for only a few species, with Wyoming localities mentioned for about nine (Hayden 1873).

Since Nelson's report, a number of surveys of lichens have been conducted in Wyoming, mostly in the last 20 years, and mostly in Yellowstone National Park or other national park units (Grand Teton NP and Devils Tower NM) and in national forests (Bighorn and Black Hills). Only a single project has focused on basin lichens, documenting species associated with soil crusts in low-elevation, sagebrush sites in central Wyoming (Muscha and Hild 2006). Scattered reports from several counties, including those represented by Nelson's collections, provide information about lichens in several overlooked counties. But five counties lack even one published account of a lichen collection (Figure 1)!

The annotated checklist just completed (Tuthill, in prep., at the behest of the Wyoming Natural Diversity Database) is based entirely on published collection reports, both printed and on-line. Locations were compiled by county, except for Yellowstone National Park (YNP) and a few records for which specific locations were unavailable. Since YNP is not entirely within Wyoming, and not all publications indicated exact location, there are a few (10) species on the list that were not verified as from the Wyoming portion of the Park.

At least 763 lichen names have been reported from Wyoming and YNP from 1888 to 2011. To account for nomenclatural changes during that time span, all nomenclature follows Esslinger (2011). Combination of synonyms reduced the number of taxa by about 100. Some older names could not be satisfactorily standardized, so those taxa were excluded, as were taxa known to be from the Montana sliver of YNP, and others thought to be misidentifications.

The resultant checklist includes 589 taxa, a ten-fold increase over the previous compilation. However, this represents lichens from only a very small portion of the state, primarily mountainous regions with federal protection. A number of herbaria, including RM, contain unpublished collections from Wyoming that can, no doubt, expand the list of species and locations. But until much more of the state has been surveyed, it will be impossible to develop a real understanding of the range and distribution of lichens in Wyoming.

As appreciation of the functional diversity and ecosystem services provided by lichens develops among ecologists and land and wildlife managers, the study of lichens and lichen communities will hopefully move to the forefront of ecological studies. When that time comes, a thorough inventory of Wyoming lichens will prove essential.

Literature Cited

Esslinger, T. L. 2011. A cumulative checklist for the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. North Dakota State University: http://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm (First Posted 1 December 1997, Most Recent Version (#17) 16 May 2011), Fargo, North Dakota.

Hayden, F. V. 1873. Sixth Annual Report of the United States Geological Survey of the Territories, Embracing Portions of Montana, Idaho, Wyoming, and Utah; Being a Report of Progress of the Explorations for the Year 1872. 42nd Congress, 3rd Session. Misc. Doc. No. 112.

Muscha, J. M. and A. L. Hild. 2006. Biological soil crusts in grazed and ungrazed Wyoming sagebrush steppe. J. of Arid Environments 67: 195—207.

Tuthill, D. E. A preliminary checklist of lichens recorded from Wyoming. In preparation.

Above: Yellow map lichen (*Rhizocarpon geographicum*) in the Snowy Range. Photo by William Brenneman.

Botanist's Bookshelf –
Bainbridge, David A. 2007. ***A Guide for Desert and Dryland Restoration: New Hope for Arid Lands.*** Island Press, Washington, DC. 416 pp., [ISBN 1-55963-969-5] $44.55+tax.

Review by Eve Warren

A Guide for Desert and Dryland Restoration is an excellent source of practical information for restoration and another fine publication from Island Press. Biased towards Island Press books, I had assumed that the text's quality would be high, but was pleased to find it to be the best and most comprehensive book for the types of dryland restoration work done in Wyoming's Bighorn Basin. It is written in an easy to read style with a comprehensive recent reference section. Published in 2007, the timing of this book is fortuitous considering the weather pattern changes that are occurring across Wyoming. The book provides guidance to implement inexpensive techniques and documentation needed to rehabilitate or restore a dryland area.

This guide will benefit anyone who has land that is losing or has lost its native plant community. It is an introduction to the critically important challenge of desert/dryland restoration that covers its technical and social aspects—the later often lacking in other restoration guides. Bainbridge starts the book with a user's guide that explains which chapters would most benefit different readers. Chapter 2 reviews the ecology of arid lands that is followed in the next chapter with some background on the economics and psychology of desertification, and Chapter 4 considers disturbance in drylands. These first four chapters address problems associated with dryland restoration, while Chapters 5 to 15 offer potential solutions for the problems. While I wanted to proceed directly to the solution techniques, I found chapters one to four to be good reviews of the nature and need for restoration work. Each chapter presents descriptions, black and white photographs, and/or illustrations, and checklists that serve as guidance for developing and initiating projects with emphasis on the core problem(s). Topics covered in these chapters include: approaches and planning; equipment and supplies; project management; soil salvage and restoration; seed collection, storage,

Above: Sweetwater County, Wyoming. By B. Heidel.

and management; container plant production and planting; direct seeding; water management and irrigation; riparian restoration; use of restored areas; and monitoring. The final chapter on the challenges that lie ahead is an overview of the history and a prospectus on the future of the work that is ahead of us. Unfortunately, there is no information or reference that deals with seed that may not germinate because of the presence of unique or unusual seed structures, such as the eliasomes of members of the Violaceae, or woody plant seed dormancy from the presence of inhibitors: Providing a comprehensive reference (i.e., Baskin and Baskin, 1998) would have alleviated this problem.

Although the last chapter ends with a pessimistic tone, it illustrates that we must choose our restoration projects carefully. The author states this about dryland restoration: "It may not be easy, it may not be cheap, but it can be done." Perhaps more importantly, we need to educate and intervene to stop or reduce overuse and abuse of areas to prevent initial or further degradation, things that Wyoming Native Plant Society and its members can do.

This book is available at the Coe Library with the call number QH88 .B35 2007. It is also available online if you are a UW student, employee, or UW affiliate!

Rocky Mountain Herbarium News

By Ron Hartman

(Editor's note: Ron Hartman was first Vice-President of Wyoming Native Plant Society and is Curator of the Rocky Mountain Herbarium.)

Whether you visit Rocky Mountain Herbarium on-line (http://www.rmh.uwyo.edu/) or on foot, you will notice major changes[1]. We are in a constant expansion mode that has recently translated to a new floor plan and magnitudes more scanned specimens for viewing online. The current holdings of Rocky Mountain Herbarium (RM) combined with the National Herbarium of the U.S. Forest Service (USFS) contain 871,710 accessions; the William G. Solheim Mycological Herbarium (RMS) contains 48,000 for a total of **919,710** specimens, up from 302,000 in 1977. Also, University of Wyoming (UW) - College of Agriculture houses the A.A. Beetle Grass Herbarium (WYAC; 60,000 accessions). The combined holdings of these herbaria rank UW at 15th of more than 750 herbaria in the nation, 5th for a state institution. A backlog of over 230,000 collections (identified, data based, with labels) is available for study by researchers. It may appear that we have been gaining on this backlog as during the past 10 years, we have processed over 191,300 specimens. Surprisingly, we have obtained roughly an equal number of collections from our aggressive regional inventories. If we were current on the backlog, the collections would consist of more than 1.42 million plant and fungal specimens ranking UW 10th in the nation, 3rd for a state institution. These combined UW accessions represent the largest holding of vascular plants and fungi, by a factor of 3, between the Mississippi and West Coast.

Due to the rapid expansion of the collections, space in existing cabinets has been inadequate. For example, more than 120,000 mounted specimens are just sitting in hopper boxes. Consequently, three rooms on the third floor of the Aven Nelson Building adjoining the RM were renovated this past summer, thanks to Greg Brown, Botany Department Head. This fall, 176 cabinets (sunflower yellow) were secured from Steel Fixture, Topeka, Kansas. These, with the inclusion of 32 cabinets that have had other uses, have lead to space for about 416,000 new specimens, or a 40 percent increase in capacity. The specimens as a whole can now be evenly dispersed throughout the old and new cabinets and the mounted specimens in hopper boxes can be inserted.

On-line, the scanned images of specimen accessions have mushroomed, including images of the Grand Teton National Park Herbarium (7,500) and of the recently completed thesis on the flora of Grand Teton National Park and Pinyon Peak Highlands (8,200; Kesonie 2009, Kesonie and Hartman 2011). This makes the Teton County flora visually available to everyone with internet access, even if it is not a simple matter for you to travel to RM or the Park herbarium.

You are invited to visit RM any time - on-line and on foot as part of the 2012 WNPS annual meeting in Laramie next June.

Literature Cited

Kesonie, D. 2009. A floristic inventory of Grand Teton National Park and the Pinyon Peak Highlands, Wyoming. M.S. Botany, University of Wyoming.

Kesonie, D.T. and R.L. Hartman. 2011. A floristic inventory of Grand Teton National Park, Pinyon Peak Highlands, and Vicinity, Wyoming, U.S.A. Journal of the Botanical Research Institute of Texas 5(1): 357-388.

[1] See also: 2009. Rocky Mountain Herbarium at Your Fingertips, *Castilleja* 28(3): 3-4; and Schmidt, L. 2010. Gold Standards of the Plant Kingdom Go Online. *Castilleja* 29(3): 7.

Growing Native Plants

Part 2. Evergreen Trees

By Robert Dorn

(*Editor's note: Robert Dorn was the first official WNPS newsletter editor, 1986-1993, transforming it into a separate duty from that of Secretary/Treasurer when he was first elected to the post.*)

Wyoming does not have many native trees compared to more wooded regions. Nevertheless, there are enough species to choose from to satisfy most landscaping objectives. Trees dominate landscapes by being the large overstory that influences conditions beneath them. They can be divided into evergreen (coniferous) and deciduous, large and small. Only the most desirable will be treated here. In general, trees can be propagated from seed or from cuttings, but with either technique, it takes a relatively long time to get a large specimen, usually 20 years or more. The time can be shortened significantly by buying large nursery stock, which, however, can be expensive.

Evergreens or conifers are mostly used to provide wind breaks, screening, year-round greenery, and bird habitat. The following five species are the most desirable for reasons mentioned below: *Abies concolor*, White Fir; *Juniperus scopulorum*, Rocky Mountain Juniper; *Picea pungens*, Colorado Blue Spruce; *Pinus ponderosa*, Ponderosa Pine; and *Pinus edulis*, Pinyon Pine.

Abies concolor grows naturally at montane elevations of about 7000 to 9000 feet in a moderate precipitation zone. It is rare in Wyoming with only a few small patches south of Rock Springs. It is more common to the south. It has the traditional Christmas tree shape and is mostly free of the pests that plague many of our other conifers. It does well at lower elevations if provided with regular moisture. Several specimens have been growing for many years around the Supreme Court Building in Cheyenne. These trees can become quite large, to 80 feet high or more and 20 feet wide, so allow them plenty of room. They are most easily grown from seed after cold stratification of 28 to 60 days and then surface sown. They are also in the nursery trade.

Abies concolor, Supreme Court Building, Cheyenne

Juniperus scopulorum is widespread in Wyoming at all but the highest elevations. It is easy to grow and grows fairly rapidly. We planted a shelterbelt of junipers near Lingle in 2004 with about 6 inch seedlings and by 2010 some of them were 7 to 8 feet high. They were drip irrigated on a regular basis throughout each summer (1 gal/hr, 1 hr/wk when there was no significant rain). They rarely exceed 25 feet in height and are relatively free of pests. They are best obtained as 1 or 2 gallon nursery stock since the cost is reasonable. Be sure you are getting Rocky Mountain Juniper and not Eastern Juniper which looks nearly identical. Also, get plants whose source is from Wyoming or an adjacent state. Junipers are an alternate host for cedar apple rust so may not be desirable around apple orchards.

Juniperus scopulorum, Laramie Mountains

Picea pungens is found naturally in our mountains, especially the southern mountains, at mostly moderate elevations. The needle color can

vary from population to population from green to light blue. This species is very popular for landscaping and is readily available from nurseries with several cultivar growth forms and colors. They can get quite large, to 75 feet high and 20 feet wide, so they need plenty of room. They are susceptible to spruce gall and other pests, especially where other spruces are common. The soil around the trees should be kept moist even in winter when it is not frozen.

Picea pungens, in Laramie park

Pinus ponderosa is found in Wyoming from escarpments on the eastern plains to moderate elevations in the mountains, but primarily in the eastern half of the state. It remains a mystery why it is so uncommon in the western half. It can get very large, to 75 feet high or more and 25 feet wide so give it plenty of room. Mature trees are susceptible to pine bark beetles which can kill the trees. Plants generally grow 1 to 2 feet a year under ideal conditions of adequate moisture and warm temperatures. We observed growth over a number of years of ponderosas in a shelterbelt we had near Cheyenne and found that late spring freezes significantly reduced the amount of growth for that year. The plants are readily available as nursery stock and are easy to grow from seed.

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Most of these species have been offered through county conservation districts as seedlings for reasonable cost but primarily for rural landowners. All young trees should be given wind protection until they are well established.

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Pinus ponderosa, Black Hills

Pinus edulis is native to Wyoming only in the area south of Rock Springs. It does not require as much precipitation as our other pines and is a small pine, seldom exceeding around 20 feet tall in Wyoming.

Pinus edulis, High Plains Research Station, Cheyenne

It normally does not do well above about 6000 feet without special protection. A warm sheltered location is best at any elevation. In recent years there have been extensive die-offs of this species in states south of Wyoming. The exact cause is not entirely certain. These trees can be grown from seed soaked in water for 24 hours before planting or obtained as nursery stock.

Taxonomy and the National Wetland Plant List, continued from p. 1

These advances in DNA analysis opened up new knowledge about evolution at a level of complexity that is mind-boggling. So why, as a Federal botanist, do I bring this up? The answer is that Federal agencies are required to follow the most current science, including all these new interpretations, to support national laws involving natural resources. For example, the National Wetland Plant List (NWPL), which is maintained by the US Army Corps of Engineers in cooperation with the Natural Resource Conservation Service (NRCS), US Fish and Wildlife Service (FWS) and the US Environmental Protection Agency (EPA), plays a key legal role under the Clean Water Act (CWA) or the Swamp Buster provisions of the Food Security Act. The NWPL is one of three legal lists in the Federal government for plants, the others being the Endangered Species Act (ESA) list and the USDA noxious weed list. The ESA list has several hundred species, the noxious species list includes around 150 species, while the NWPL has 8,200 species. So one might ask, "Why worry about the most current taxonomy in the NWPL when this is about clean water?"

The four Federal agencies involved with the NWPL care about taxonomy or the current circumscription of particular taxa because each plant is assigned a wetland rating that is used within the wetland delineation protocol to determine the limits of Federal and state jurisdiction under the CWA or Swamp Buster. That process requires that any site in question pass a test with three parts: the site must have hydric soils, hydrophytic vegetation, and wetland hydrology. Each part of the test uses indicators and a method by which to evaluate the indicators. For wetland vegetation, it comes down to a stand of plants having wetland plant indicator status ratings that are considered hydrophytes that occur at an abundance of at least half or more of the aerial cover of a sample plots.

The NWPL has recently undergone an extensive updating of the wetland ratings. Each of the plants on the NWPL receives a wetland rating [Facultative (FAC), Obligate (OBL), etc.] based on extensive review by the professional botanists who could be assembled. They used their best professional judgment to rate wetland plants using the most current taxonomy. The last legal update of the NWPL was in 1988. Since then, there have been extensive changes in both taxonomy and nomenclature. The 1988 list included 6,728 species. In 1996, the list was unofficially revised and was increased to 7,662 species. Our current list has increased to include 8,200 species. The estimated number of changes in species between 1988 and 1996 was 1200 species; 1996 to 2011 it was 1600 species.

The consequences of failing to maintain an updated taxonomic list of wetland plants could be significant. For example, if the NWPL became outdated and the wetland rating of a species that recently was split into two separate taxa and the wetland rating was assigned to the non-wetland component of its older name and it caused an erroneous jurisdictional decision, we could be challenged legally. For example, the native sweetgrass is a wetland grass, formerly known as *Hierochloe odorata* (L.) P. Beauv. was divided into two species: *Anthoxanthum hirtum* (Schrank) Y. Schouten & Veldkamp and *A. monticola* (Bigelow) Y. Schouten & Veldkamp. However, in this split, only the *A. hirtum* section of the former species is considered to be a wetland plant and the wetland rating of *H. odoratum* followed the new name and species concept.

So how did we nearly complete the NWPL update with all this fluctuation? First, we work in collaboration with Biota of North America (BONAP), under the direction of John Kartesz, who maintains and updates the current taxonomy and nomenclature of the vascular flora of the United States, working with any source of information available from literature to herbaria to organizations to individuals. We obtain taxonomic, nomenclature and distribution data from BONAP. The county-based distribution data from BONAP is used to sort the wetland plants into 10 regions of the United States. We use custom programming scripts to align old taxonomy and nomenclature with new concepts and transfer proper wetland ratings from old to new. Then, with the help of hundreds of professionals, we have evaluated over 130,000 items of input on wetland plants at the species level, e.g., written letters, comments made

on the web site, and data and studies as part of the intended updating of the wetland ratings process. Professional involvement includes input from 30 contracted professional/academic botanists, 65 Federal regional panel members/botanists across 4 agencies, as well as representatives from 6 other Federal agencies, numerous states agencies, and academic institutions, and about 400 public sector participants. All species did not receive the same level of interest and input to generate straightforward results, so it required 16 various computer algorithms to resolve the wetland ratings and to keep consensus as close as possible, given the input from a wide range of professionals.

The newly revised NWPL draft list, along with all the responses to the Federal Register announcement are now prepared for review at the Washington headquarters level. We hope that we can have a new legal NWPL around February 2012. Meanwhile, we are preparing to update the taxonomy and nomenclature again. We will add upland plants along with the wetland plants for the flora of the US to the NWPL web site. Additionally we will be adding search capabilities for watersheds and Bailey ecoregions across the US landscape to enable various search capabilities of the web site database. Plus in the coming year we will add electronic plant identification keys. The web link for the NWPL is: http://wetland_plants.usace.army.mil/

Above: Marsh marigold (*Caltha leptosepala*) is an obligate wetland plant throughout Wyoming. Illustrated by Kris Meiring, From: Cooper, D.J. 1989. *A Handbook of Wetland Plants of the Rocky Mountain Region*. EPA Region VIII publication.

As the advances in taxonomic interpretations move along at an accelerated rate, we in the applied world focus on staying abreast so that we can maintain a current and accurate plant list to support the national wetland program. Once the NWPL is legal, we will release multiple user-friendly ways to sort wetland plant lists for local, regional and national use.

Bob Lichvar
Director of the National Wetland Plant List
U.S. Army Corps of Engineers

(*Editor's Note: Robert Lichvar was the first president of Wyoming Native Plant Society, 1981-1982.*)

Coming Soon To FaceBook…
WNPS will soon be adding a FaceBook page where we will be posting events and other organizational information. If you have any ideas, please contact Karen Clause at kdclause@centurytel.net to help us shape our page. Be the first to "**Like**" us! KC

Wyoming Plant Species of Concern – Update Pending

Reviewers are sought for the Wyoming Plant Species of Concern list update planned for 2012. Botanists active in Wyoming, including federal agency staff who maintain or work with sensitive/rare species lists, have been the primary reviewers.

Additions and deletions to the list, and updates to distribution, agency status, state ranks, and ranking factors will be represented. The most recent list update was in 2007. If you have new collection and survey data that represent changes to status and distribution, or are interested in becoming a reviewer, please contact: Bonnie Heidel, bheidel@uwyo.edu; Wyoming Natural Diversity Database, University of Wyoming, 1000 E. University Ave., Laramie, WY 82071.

...Did you ask Santa for a lichen checklist, wetland plant guidance, native evergreen planting tips, a guide to landscape restoration, or a sweet helping of nostalgia? You'll find this and more in the current issue.

The next newsletter deadline is February 18.

Wyoming Native Plant Society is a non-profit organization established in 1981 to encourage the appreciation and conservation of the native plants and plant communities of Wyoming. The Society promotes education and research through its newsletter, field trips, and annual student scholarship and small grants awards. Membership is open to individuals, families, or organizations. To join or renew, return this form to:

Wyoming Native Plant Society
P.O. Box 2500, Laramie, WY 82073

Name: _____
Address: _____
Email: _____

___ $7.50 Regular Membership
___ $15.00 Scholarship Supporting Membership
___$200.00 Life Membership

Check one: ___New member
___Renewing member

__Renewing members, check here if this is an address change.

__Check here if you prefer to receive the newsletter electronically rather than a paper copy.

Wyoming Native Plant Society
P.O. Box 2500
Laramie, WY 82073

Wyoming Native Plant Society – Renewal and Ballot

2012 Membership Renewal

Name: _____

Address: _____

_____

Email address (optional) _____

_____ $ 7.50 Regular Membership

_____ $15.00 Scholarship-supporting Membership

_____ $200.00 Life Membership

_____Check here if you would prefer receiving newsletters by electronic email notification

Check one:

_____New member
_____Renewing member ____Renewing members, check here if this is an address change – thanks!

2012 Ballot – *Please mail for receipt by January 21*
or email (amb749@yahoo.com)

Please vote for one person for each office:

President	_____	Amy Taylor (Jackson)	Secretary/Treasurer	_____	Ann Boelter (Laramie)
Vice President	_____	Dorothy Tuthill (Laramie)	Board (2-year term)	_____	Drew King (Basin/ Laramie)

Write-in candidate and office: _____
[The second Board position is held by Karen Clause (Pinedale), who will start her second year of a two-year term.]

Ann Boelter is current Secretary/Treasurer of the Wyoming Native Plant Society who is running for another term in 2012. She previously coordinated research projects for the Environment and Natural Resources – Ruckelshaus Institute. En route to her latest Alaska expedition she helped coordinate the 2011 WNPS annual meeting in the Big Horn Mountains.

Amy Taylor is current President of the Wyoming Native Plant Society who is running for another term in 2012. She is also current Treasurer of the Teton Chapter and coordinates Teton Chapter hikes that jump-started the WNPS 2011 statewide hike flyer.

Drew King is running for the 2-year Board position. He graduated from the University of Wyoming with a Bachelor's degree in Botany. He helped co-author the Black Hills National Forest *Botrychium* report for 2004-2005 and a field manual for common riparian plants of the Bighorn Mountains. He worked with agronomists and professional botanists researching the morphological characteristics of native grass seed for Native Seedsters Inc., a private company specializing in native seed harvest. He is pursuing a Master's degree in Botany at the University of Wyoming. Drew is native to Wyoming's Big Horn Basin, and is notorious for dragging companions on plant hikes.

Dorothy Tuthill is current Vice-President of the Wyoming Native Plant Society who is running for another term in 2012. She is a fungal systematist with graduate degrees from UW's Department of Botany, and Associate Director of the Berry Biodiversity Conservation Center. Dorothy is spearheading fieldtrip plans for the 2012 joint WNPS/Penstemon Society annual meetings and would love to hear from you if you are interested in becoming a trip leader.
Please send completed ballot and renewals to: Wyoming Native Plant Society, P.O. Box 2500, Laramie, WY 82073 - -*Thanks!*

Wyoming Native Plant Society

2012 MARKOW SCHOLARSHIP/SMALL GRANT

Applications are due 18 February 2012. Awards will be made in April, 2012.

Electronic copies of the applications are also posted on the WNPS homepage at: www.uwyo.edu/wyndd/wnps

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At the 2011 Annual Meeting, members voted unanimously to EXPAND the award to $500-1000 and to open the funding to all residents of Wyoming and WNPS members for educational projects in addition to botany thesis research.

The Wyoming Native Plant Society promotes appreciation, understanding and conservation of native plants and plant communities through its annual scholarship/small grants program. Thesis research may address any aspect of botany, including floristics, taxonomy, ecology, genetics, plant geography, range science, paleontology, pollination biology, physiology, and mycology. *In addition, other projects like botany curriculum development, public native plant gardens, and other research will be considered.*

Project or study proposals must pertain to native plants of Wyoming. Preference will be given to proposals expected to generate research data or promote public understanding. Up to $1,000 of expenses may be covered per proposal. *Awards defray direct project costs, excluding labor or conferences.* Eligible expenses include:

1) Direct costs of travel, meals, and lodging to carry out the study or project.

2) Supply and service expenses used for the sole purpose of the study or project (e.g., consumable supplies such as laboratory chemicals, soil and nursery stock, and services such as phone and computer time).

The deadline for proposals is February 18. The grant competition is open to residents of Wyoming or members of WNPS. **Scholarships/Grants will be announced in April.**

The scholarship/grant proposal should be no longer than two pages and should include the following information:

- Contact person and organizational affiliation, as appropriate
- Mailing address, telephone number, and E-mail
- Short abstract of the study or project (2-5 sentences)
- Description of the study or project (objectives, methods, description of final product, and short description of past similar work (if applicable)
- Description of how the study or project will benefit native plant conservation in Wyoming
- Overall budget showing amount requested from WNPS ($1,000 or less) and the intended purpose of the funding, as well as other funding sources
- Time frames for completion of the study or project
- Brief statement of applicant's qualifications or biography
- Names and addresses of two people as references.

Successful scholarship or grant applicants will be required to submit a final report documenting the study or project accomplishments to WNPS, suitable for publication in the *Castilleja* newsletter.

Please send completed applications to:

Wyoming Native Plant Society, P.O. Box 2500, Laramie, WY 82073; or amb749@yahoo.com